
Draft PUMA Designations for Michigan

Introduction

Among the valuable products produced by the U.S. Census Bureau are “Public Use Microdata Sets,” often referred to as “PUMS files.” These datasets consist of a sample of individual responses to the census, the American Community Survey, or other surveys. In order to preserve confidentiality, PUMS files do not include any identifying information or any geographic codes for areas smaller than a “PUMA.”

“PUMA’s” (or “Public Use Microdata Areas”) are artificial sub-state geographic areas that are developed for use in PUMS files. The Census Bureau has asked each statewide lead agency in the State Data Center program to propose PUMA boundaries for its state by the end of December.

This document is being disseminated for the purpose of eliciting comments and suggestions for the delineation of PUMA’s in Michigan. Comments and suggestions should be sent to the State Demographer, Kenneth Darga, at DargaK@michigan.gov

Considerations in Designating PUMA’s

Each PUMA must:

- Contain 100,000 or more residents in the 2010 Census and throughout the upcoming decade.
- Be geographically contiguous.
- Be comprised of counties or census tracts.

When a PUMA splits a county, each resulting part of the county must contain at least 2,400 residents.

Because detailed tabulations for individual PUMA’s tend to have extremely wide confidence intervals, data for aggregations of PUMA’s are generally more useful than data for individual PUMA’s themselves. Thus, a critical consideration when designating PUMA’s is to ensure that they can be aggregated with one another in meaningful ways. It is possible to aggregate PUMS data for large cities, counties, or planning regions **only if the PUMA boundaries have been designated in such a way that they do not cross the pertinent city, county, or regional boundaries.**

The Census Bureau also prefers that PUMA’s avoid crossing the boundaries of currently designated metropolitan or micropolitan areas. However, there is no way for these PUMA’s to reflect the new designations that will be released in 2013. Moreover, because the current standards for designating metropolitan and micropolitan areas were developed for statistical purposes only, they not always useful for the social, demographic, economic, and political purposes for which PUMS data are tabulated. Therefore, although it is desirable to maintain consistency with current metropolitan and micropolitan areas when feasible, it is reasonable to subordinate that objective to other objectives that are more important to users of the data.

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A more important consideration is to avoid crossing county boundaries unnecessarily. Although it is necessary for PUMA's to cross county boundaries in cases where the counties in question have fewer than 100,000 residents, a county with 100,000 or more residents should be allowed to stand alone unless more important considerations require otherwise. As already noted, PUMA boundaries that cross county boundaries prevent tabulation of PUMS data for the individual counties in question. Moreover, the Census Bureau will subsequently combine PUMA's into "place-of-work/migration PUMA's" (or "POW PUMA's"), and each PUMS record will indicate any applicable POW PUMA from which a resident migrated or to which a resident commutes. Because POW PUMA's will consist of entire counties or combinations of entire counties, any PUMA that crosses a county boundary will require the affected counties to be joined into the same POW PUMA. That will sometimes have an adverse effect upon the usefulness of migration and commuting analyses based on PUMS data.

It is also desirable to avoid splitting Michigan's 14 state planning regions.

Draft PUMA Designations

A first-draft of new PUMA designations is described below. Some of the possible alternative designations are also noted.

Region 1 (Southeast Michigan)

Each county in this region can be divided into one or more PUMA's. Ideally, the city of Detroit would also be divided into 4 to 6 PUMA's that reflect its neighborhood or planning district boundaries.

County		2000	2010	Change 2000- 2010	Possible 2010 PUMA
093	Livingston	156,943	180,967	15.3%	180,967
099	Macomb	788,120	840,978	6.7%	up to 8 PUMAs
115	Monroe	145,939	152,021	4.2%	152,021
125	Oakland	1,194,346	1,202,362	0.7%	up to 11 PUMAs
147	Saint Clair	164,242	163,040	-0.7%	163,040
161	Washtenaw	322,818	344,791	6.8%	up to 3 PUMAs
	Detroit	951,270	713,777	-25.0%	up to 6 PUMAs
163	remainder of Wayne	1,109,910	1,106,807	-0.3%	up to 10 PUMAs

The key problem for this region is the Census Bureau's requirement for contiguity. The Grosse Pointes and Harper Woods are not large enough to comprise a PUMA by

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themselves, so they need to be combined with adjacent communities. The only adjacent communities are the city of Detroit and the southern portion of Macomb County.

There are at least three very serious disadvantages to combining these communities with a portion of Detroit:

- It would become impossible to combine PUMA's to represent the City of Detroit;
- It would become impossible to combine PUMA's to represent the remainder of Wayne county outside Detroit; and
- The particular PUMA that crossed the Detroit boundary would be highly heterogeneous. (In this case, "highly heterogeneous" is a euphemism for "embarrassingly useless and statistically disruptive.")

There are also at least three very serious disadvantages to combining these communities with a portion of Macomb County:

- It would become impossible to combine PUMA's to represent Macomb county;
- It would become impossible to combine PUMA's to represent out-county Wayne or Wayne county as a whole; and
- It would become necessary for Wayne and Macomb counties to be combined into a single place-of-work PUMA. That would greatly reduce the usefulness of labor market and commuting analyses for southeast Michigan that are based on PUMS data.

One solution would be to combine the six communities that lie east of Detroit with some of the communities that lie west of Detroit. In addition to forming a PUMA that would be meaningful with respect to the social, demographic, and economic topics that can be analyzed with PUMS data, this approach would preserve the boundaries of Detroit, of out-county Wayne, and of Macomb county. The Census Bureau has been asked to make an exception to the contiguity requirement for this purpose.

Hamtramck and Highland Park pose a similar issue. If we are given the option of doing so, would it be better for these two communities to be combined with some of the communities south or west of the city, or should they be combined with portions of Detroit?

Region 2 (Jackson, Hillsdale, and Lenawee counties)

This is one of the cases in which it is easy to define PUMA's that are consistent with the boundaries of the planning region.

County		2000	2010	Change 2000- 2010	Possible 2010 PUMA
059	Hillsdale	46,540	46,688	0.3%	146,580
091	Lenawee	98,970	99,892	0.9%	
075	Jackson	158,426	160,248	1.2%	

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Region 3: South Central Michigan

This region has several options, but none of the available options is perfect. One option would be:

County		2000	2010	Change 2000- 2010	Possible 2010 PUMA
077	Kalamazoo	238,602	250,331	4.9%	2 PUMAs
015	Barry	56,776	59,173	4.2%	195,319
025	Calhoun	137,991	136,146	-1.3%	
023	Branch	45,781	45,248	-1.2%	106,543
149	Saint Joseph	62,411	61,295	-1.8%	

Kalamazoo county is large enough to be divided into two PUMA's. (Although the city of Kalamazoo is not large enough to serve as a PUMA by itself, it can be combined with Portage and/or with other communities.)

Calhoun county is large enough to stand alone as a PUMA, but Barry county needs to be combined with some other county. The only counties in the region to which it is adjacent are Kalamazoo and Calhoun (A PUMA with non-contiguous counties is more problematic than a PUMA with non-contiguous communities within a county, since the non-contiguous counties would generally be inappropriate as a place-of-work/migration PUMA.)

Combining Barry with either of the two larger counties will result in losing the ability to tabulate PUMS data for that county alone or to identify migrants and commuters to and from that county alone. Barry was combined with Calhoun in this draft because Calhoun is small enough that it would generally need to be combined with other areas anyway in order to reduce statistical margins of error, and Barry is probably the most appropriate county with which it can be combined.

Barry county could also be combined with Ionia county from Region 8. That would be desirable from the standpoint of allowing Calhoun county to stand alone as a PUMA, not breaking the boundary of the current Grand Rapids MSA, and making it possible for place-of-work PUMA's to distinguish Kalamazoo county, Calhoun county, and Barry-Ionia. On the other hand, it would prevent aggregation of PUMS data to represent Region 3 or Region 8 as a whole. (See comments on Region 5 below for further discussion of what is lost and what is gained when counties have to be combined to form POW PUMA's.)

Region 4: Southwestern Michigan

This is one of the cases in which it is easy to define PUMA's that are consistent with the boundaries of the planning region.

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County		2000	2010	Change 2000- 2010	Possible 2010 PUMA
021	Berrien	162,491	156,813	-3.5%	156,813
027	Cass	51,086	52,293	2.4%	
159	Van Buren	76,239	76,258	0.0%	128,551

Region 5: GLS Region (Genesee, Lapeer and Shiawassee counties)

This region has several options, but none of the available options is very good.

Genesee county is large enough to be divided into three or four PUMA's, but Lapeer and Shiawassee are each too small to serve as PUMA's by themselves. They are also on opposite sides of Genesee county, so they cannot be combined with one another.

The best option might be to combine Lapeer county with the eastern portion of Genesee county and to combine Shiawassee county with the western portion of Genesee county. However, these cross-county PUMA's would make it impossible to tabulate PUMS statistics for Genesee county as a whole and they would also require Genesee, Lapeer, and Shiawassee counties to be combined into a single place-of-work/migration PUMA.

Another option would be to combine Shiawassee county with Clinton county from Region 6 and to combine Lapeer county with Huron, Sanilac, and Tuscola counties from Region 7. However, that would make it impossible to tabulate PUMS data for Region 5, Region 6, or Region 7 as a whole.

How critical is it for Genesee county to stand alone as a place-of-work/migration PUMA?

The biggest deficiency of POW PUMA's is that the Census Bureau has already decided that they will be comprised of entire counties. Thus, it will not be possible to tabulate detailed characteristics of out-migrants from cities like Detroit or Flint because they will be indistinguishable from (at a minimum) other migrants from Wayne and Genesee counties respectively. Likewise, it will not be possible to distinguish in-migrants from elsewhere in the county from people who have moved from one residence to another within the city or to tabulate characteristics of commuters into large cities. Metropolitan counties are large enough and diverse enough that migration and commuting analyses at the county level are much less valuable than analyses at the city level.

Having Genesee, Lapeer, and Shiawassee counties combined into the same POW PUMA would cause the loss of additional capabilities (e.g. the ability to tabulate characteristics of migrants and commuters to and from Genesee county). However, that loss would be offset by gaining the ability to tabulate characteristics of migrants and commuters to and from the GLS region as a whole. (Otherwise, migrants and

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commuters to and from Shiawassee and Lapeer counties would be combined with migrants and commuters to and from Clinton county and the Thumb respectively.) It should also be noted that these limitations only affect tabulations based on PUMS files; standard ACS tabulations and county-to-county migration and commuting products would not be affected.

Another issue is that the city of Flint has only 102,000 residents, so it will not be able to serve as a PUMA by itself if it experiences significant population loss in the coming decade. Therefore, it will need to be combined with Flint township and/or other adjacent communities.

Thus, one of the possible configurations for this region would be:

County		2000	2010	Change 2000- 2010	Possible 2010 PUMA
087	Lapeer	87,947	88,319	0.4%	100,000 +
049	eastern Genesee				
049	Genesee	436,213	425,790	-2.4%	2 additional PUMAs
049	western Genesee				100,000 +
155	Shiawassee	71,695	70,648	-1.5%	

Region 6: Tri-county Region (Ingham, Clinton and Eaton counties)

This region can be easily divided into PUMA's that are consistent with the boundaries of the planning region, but there are several issues on which feedback is needed.

County		2000	2010	Change 2000- 2010	Possible 2010 PUMA
045	Eaton	103,721	107,759	3.9%	183,141
037	Clinton	64,715	75,382	16.5%	
065	Ingham	279,409	280,895	0.5%	2 PUMAs

The portion of Lansing in Ingham county can stand alone as a PUMA, but it can also be combined with East Lansing and/or other adjacent communities or even with the portion of Lansing in Eaton county. (The latter option, however, would require Ingham and Eaton counties to be joined together into the same place-of-work/migration PUMA.)

It is also possible for Eaton county to stand alone and for Clinton county to be combined with Shiawassee county from Region 5. That would make it possible to tabulate PUMS data for Genesee county alone and Eaton county alone, but it would make it impossible to

tabulate PUMS data for Region 5 or Region 6 as a whole. (See discussion of Region 5 above.)

Clinton county is combined with Eaton county in this draft because Eaton county is small enough that it will usually need to be combined with other areas anyway in order to reduce statistical margins of error, and Clinton county is the most suitable county with which it can be combined for most purposes. That preserves the ability to aggregate PUMS data for planning regions.

Region 7: East Central Michigan

This region can be easily divided into PUMA's that are consistent with the boundaries of the planning region, but there are several options on which feedback is needed.

One way to divide the region would be as follows:

County		2000	2010	Change 2000- 2010	Possible 2010 PUMA
017	Bay	110,271	107,771	-2.3%	107,771
145	Saginaw	210,051	200,169	-4.7%	200,169
111	Midland	82,797	83,629	1.0%	109,321
051	Gladwin	26,042	25,692	-1.3%	
073	Isabella	63,336	70,311	11.0%	112,787
057	Gratiot	42,289	42,476	0.4%	
011	Arenac	17,279	15,899	-8.0%	118,860
035	Clare	31,259	30,926	-1.1%	
069	Iosco	27,343	25,887	-5.3%	
129	Ogemaw	21,644	21,699	0.3%	
143	Roscommon	25,452	24,449	-3.9%	
063	Huron	36,088	33,118	-8.2%	131,961
151	Sanilac	44,511	43,114	-3.1%	
157	Tuscola	58,263	55,729	-4.3%	

Another option would be to combine Gratiot with Midland, Clare with Isabella, and Gladwin with Arenac-Iosco-Ogemaw-Roscommon.

It is also possible for Lapeer county from Region 5 to be combined with Huron-Sanilac-Tuscola. However, that would make it impossible to tabulate PUMS data for Region 5 or Region 6 as a whole. (See discussion of Region 5 above.)

Region 8: West Michigan

One way to divide the region would be as follows:

County		2000	2010	Change 2000- 2010	Possible 2010 PUMA
081	Kent	574,421	602,622	4.9%	Up to 5 PUMAs
139	Ottawa	238,413	263,801	10.6%	2 PUMAs
005	Allegan	105,631	111,408	5.5%	111,408
067	Ionia	61,539	63,905	3.8%	193,573
107	Mecosta	40,547	42,798	5.6%	
117	Montcalm	61,270	63,342	3.4%	
133	Osceola	23,199	23,528	1.4%	

It would also be possible for Barry county from Region 3 to be combined with Ionia county. (Mecosta, Montcalm, and Osceola counties could still serve as a PUMA in that case.) This would preclude PUMS analyses for Region 3 or Region 8 as a whole, but it would be consistent with the current boundaries of the Grand Rapids MSA and it would arguably result in slightly better place-of-work/migration PUMA's for Region 3.

Input is also needed with respect to how Kent and Ottawa counties should be split into PUMA's.

Region 9: Northeast Michigan

This is one of the cases in which it is easy to define PUMA's that are consistent with the boundaries of the planning region:

County		2000	2010	Change 2000- 2010	Possible 2010 PUMA
001	Alcona	11,709	10,942	-6.6%	136,711
007	Alpena	31,297	29,598	-5.4%	
031	Cheboygan	26,406	26,152	-1.0%	
039	Crawford	14,236	14,074	-1.1%	
119	Montmorency	10,316	9,765	-5.3%	
135	Oscoda	9,399	8,640	-8.1%	
137	Otsego	23,310	24,164	3.7%	
141	Presque Isle	14,421	13,376	-7.2%	

Region 10: Northwest Michigan

There are several acceptable ways to divide this region, such as:

County		2000	2010	Change 2000- 2010	Possible 2010 PUMA
055	Grand Traverse	77,655	86,986	12.0%	108,694
089	Leelanau	21,125	21,708	2.8%	
009	Antrim	23,102	23,580	2.1%	189,218
029	Charlevoix	26,087	25,949	-0.5%	
047	Emmet	31,435	32,694	4.0%	
079	Kalkaska	16,565	17,153	3.5%	
113	Missaukee	14,473	14,849	2.6%	
019	Benzie	15,986	17,525	9.6%	
101	Manistee	24,500	24,733	1.0%	
165	Wexford	30,475	32,735	7.4%	

It would also be possible to add Benzie, or Benzie-Manistee, or Benzie-Manistee-Wexford to Grand Traverse and Leelanau.

Another alternative would be to join Emmet-Charlevoix-Antrim-Kalkaska with Grand Traverse and to join Leelanau with Benzie-Manistee-Wexford-Missaukee.

The configuration in the box may be preferable, however, because it makes the smallest allowable addition to Grand Traverse for purposes of migration and commuting analysis.

Regions 11/12/13: Eastern, Central, and Western Upper Peninsula

Because PUMA's are required to have at least 100,000 residents, it is necessary for them to cross regional planning boundaries in the Upper Peninsula. The Eastern UP and the Western UP each have fewer than 100,000 residents, so both regions need to be joined with counties from the Central UP.

There are several options for doing this, such as:

County		2000	2010	Change 2000- 2010	Possible 2010 PUMA
033	Chippewa	38,543	38,520	-0.1%	
095	Luce	7,028	6,631	-5.6%	
097	Mackinac	11,941	11,113	-6.9%	
003	Alger	9,860	9,601	-2.6%	
153	Schoolcraft	8,900	8,485	-4.7%	
041	Delta	38,528	37,069	-3.8%	

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109	Menominee	25,323	24,029	-5.1%	135,448
103	Marquette	64,634	67,077	3.8%	
043	Dickinson	27,474	26,168	-4.8%	
013	Baraga	8,739	8,860	1.4%	
053	Gogebic	17,375	16,427	-5.5%	
061	Houghton	36,013	36,628	1.7%	
071	Iron	13,129	11,817	-10.0%	
083	Keweenaw	2,296	2,156	-6.1%	
131	Ontonagon	7,817	6,780	-13.3%	175,913

It would also be possible to exchange Marquette and Menominee or to have both of them in the east or both in the west.

Another possibility would be to have one PUMA for the northern counties and one for the southern counties. (In this case, Gogebic could be joined with either group.)

Region 14: West Michigan Shoreline

This is one of the cases in which it is easy to define PUMA's that are consistent with the boundaries of the planning region:

County		2000	2010	Change 2000- 2010	Possible 2010 PUMA
121	Muskegon	170,208	172,188	1.2%	172,188
085	Lake	11,274	11,539	2.4%	115,274
105	Mason	28,283	28,705	1.5%	
123	Newaygo	47,858	48,460	1.3%	
127	Oceana	26,857	26,570	-1.1%	

Summary of Issues for Comment

Comments and suggestions are welcome regarding any aspect of the PUMA designations. Specific issues requiring comment include:

- (1) How to divide units of geography that can support more than one PUMA:
 - Region 1: Detroit, out-county Wayne, Oakland, Macomb, Washtenaw counties
 - Region 3: Kalamazoo county
 - Region 5: Genesee county
 - Region 6: Ingham county
 - Region 8: Kent, Ottawa counties

Proposed divisions of counties can be initially specified in terms of cities, townships, and villages, but they will eventually need to be translated into corresponding census tracts for the actual delineation of PUMA's.

- (2) Should the ability to aggregate data for state planning regions be preserved at the expense of the ability to aggregate data for certain individual counties?

It is possible to designate PUMA's in such a way that data can be aggregated for each of state planning regions in the Lower Peninsula, but only at the cost of combining Calhoun with Barry, Eaton with Clinton, and Genesee with Lapeer and Shiawassee.

The ability to tabulate data separately for Calhoun, Eaton, and Genesee counties can be preserved only at the cost of not being able to tabulate data for Region 3, Region 5, Region 6, Region 7, and Region 8.

- (3) What is the best configuration for the Lansing PUMA:

- The portion of Lansing in Ingham county by itself
- The portion of Lansing in Ingham county plus portions of East Lansing and/or other communities in Ingham county
- The entire city of Lansing (which would require Ingham and Eaton counties to be combined for purposes of PUMS migration and commuting analyses).

- (4) Which option is better for the northern portions of Region 7:

- Midland-*Gladwin*
- Isabella-*Gratiot*
- Arenac-*Clare*-Iosco-Ogemaw-Roscommon

-or-

- Midland-*Gratiot*
- Isabella-*Clare*
- Arenac-*Gladwin*-Iosco-Ogemaw-Roscommon

- (5) Which option is best for Region 10:

- Combining Grand Traverse with only Leelanau
- Combining Grand Traverse with Leelanau-Benzie, Leelanau-Benzie-Manistee, or Leelanau-Benzie-Manistee-Wexford
- Combining Grand Traverse with Emmet-Charlevoix-Antrim-Kalkaska

- (6) Which option is best for the Upper Peninsula:

- Placing Menominee in the eastern UP and Marquette in the west
- Placing Marquette in the eastern UP and Menominee in the west
- Placing both in the east
- Placing both in the west

Comments on these and other issues should be addressed to the state demographer, Kenneth Darga, at: DargaK@michigan.gov

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